



Figure 2-26. Structure of the cellular membrane. A bilayer of lipid is the framework of membranes surrounding the cell and intracellular organelles. Proteins (eg., receptors, ion channels, junctional complexes between cells) are embedded within the matrix of lipid.

The basic unit of the bilayer is a composite of phospholipids (phosphatidylcholine, sphingomyelin, phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol). A phospholipid contains a polar hydrophilic ("water-loving") head and two nonpolar hydrophobic ("water-hating") tails. Heads are oriented toward the aqueous environments of both the extracellular space and cytoplasm.

Membranes usually exhibit a high degree of flexibility. Points of unsaturation (presence of C=C bonds) produce kinks within phospholipid tails. A more fluid membrane is created when adjacent tails are not aligned in parallel (ie., cannot pack closely together).

Cholesterol is also a major constituent of the lipid fraction of membranes. Cholesterol stabilizes the membrane by interacting with regions of the hydrocarbon chain near the polar head of phospholipids (distal portions of the chain remain flexible).